

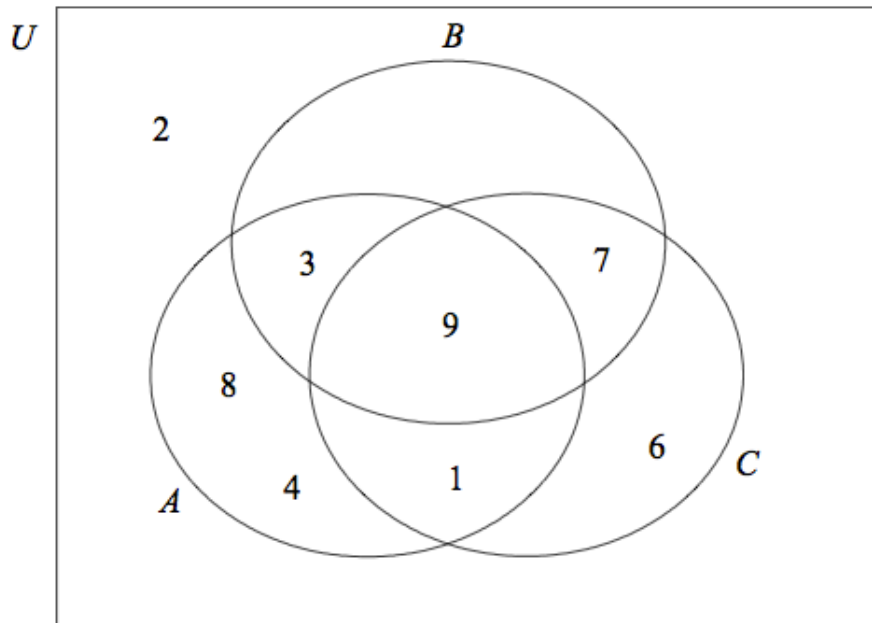
G9 Add-Venn Diagrams

Final Assessment :

Due Friday 27th of September 2013

Question 1 :

In the Venn diagram below, A , B and C are subsets of a universal set $U = \{1, 2, 3, 4, 6, 7, 8, 9\}$.



List the elements in each of the following sets.

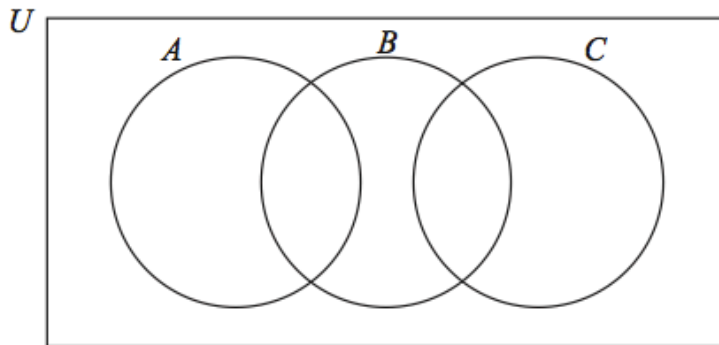
- (a) $A \cup B$
- (b) $A \cap B \cap C$
- (c) $(A' \cap C) \cup B$

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Question 2 :

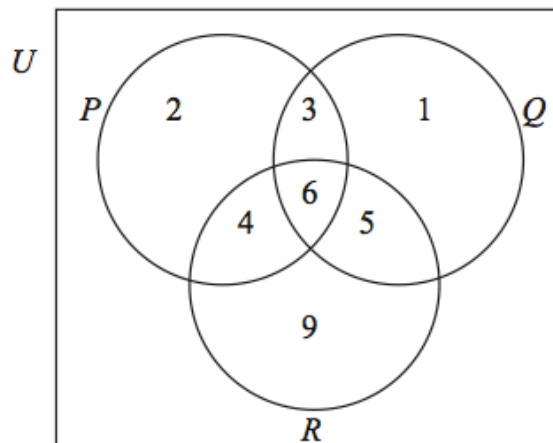
- (a) Shade $(A \cup B) \cap C'$ on the diagram below.

[2 marks]



- (b) In the Venn diagram below, the number of elements in each region is given. Find $n((P \cap Q) \cup R)$.

[2 marks]



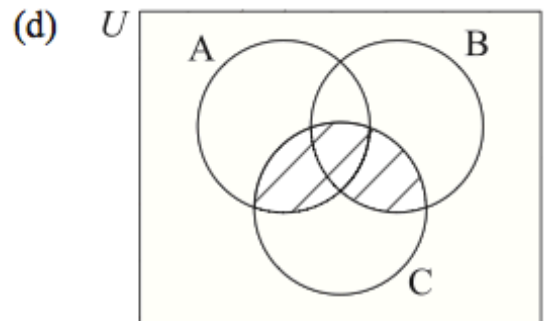
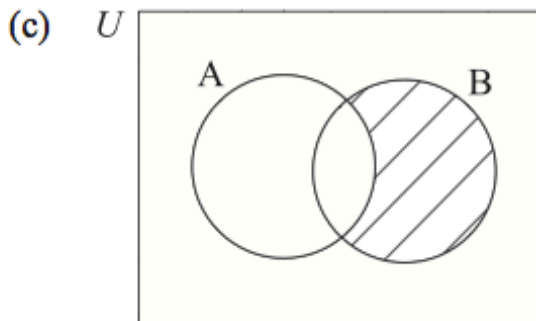
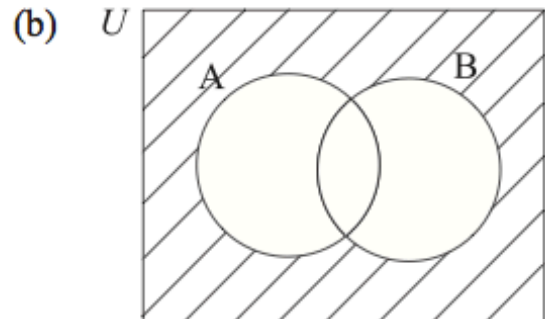
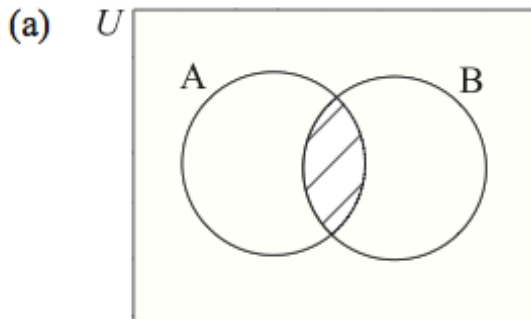
- (c) U is the set of positive integers, \mathbb{Z}^+ .
 E is the set of even numbers.
 M is the set of multiples of 3.

- (i) List the first six elements of the set M .
 (ii) List the first six elements of the set $E' \cap M$.

[2 marks]

Question 3 :

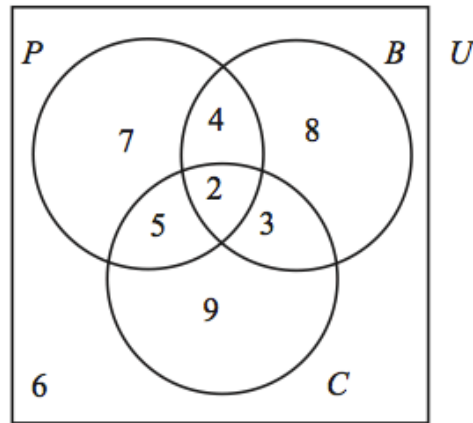
Write down an expression to describe the shaded area on the following Venn diagrams:



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Question 4 :

The Venn diagram shows the numbers of pupils in a school according to whether they study the sciences Physics (P), Chemistry (C), Biology (B).



- (a) Write down the number of pupils that study Chemistry only. *[1 mark]*
 - (b) Write down the number of pupils that study **exactly** two sciences. *[1 mark]*
 - (c) Write down the number of pupils that do not study Physics. *[2 marks]*
 - (d) Find $n[(P \cup B) \cap C]$. *[2 marks]*
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Question 5 :

A school offers three activities, basketball (B), choir (C) and drama (D). Every student must participate in at least one activity.

16 students play basketball only.

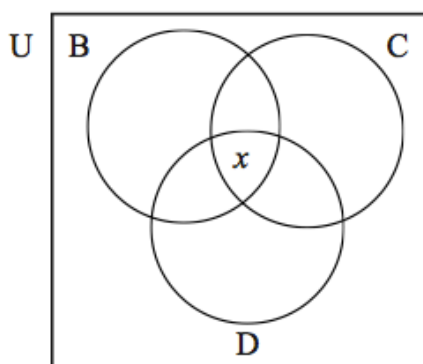
18 students play basketball and sing in the choir but do not do drama.

34 students play basketball and do drama but do not sing in the choir.

27 students are in the choir and do drama but do not play basketball.

- (a) Enter the above information on the Venn diagram below.

[2 marks]



99 of the students play basketball, 88 sing in the choir and 110 do drama.

- (b) Calculate the number of students x participating in all three activities.

[1 mark]

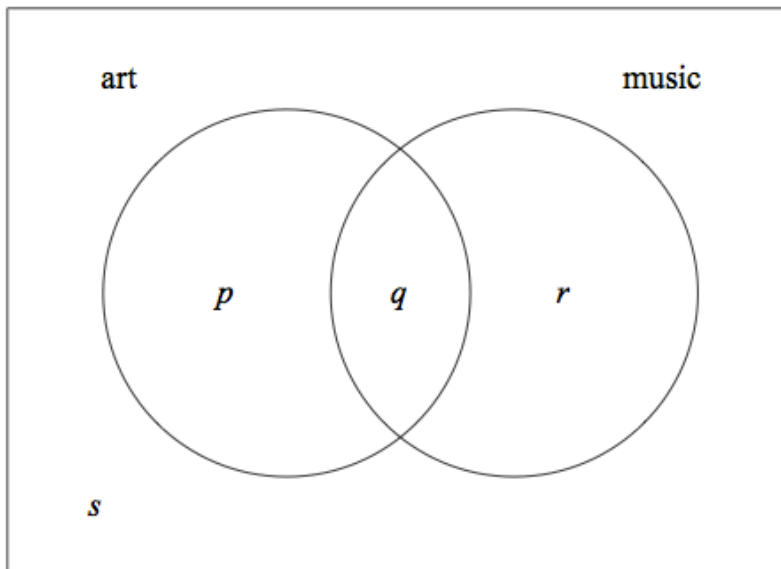
- (c) Calculate the total number of students in the school.

[3 marks]

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Question 6 :

In a group of 16 students, 12 take art and 8 take music. One student takes neither art nor music. The Venn diagram below shows the events art and music. The values p , q , r and s represent numbers of students.



- (a) (i) Write down the value of s .
- (ii) Find the value of q .
- (iii) Write down the value of p and of r .

[5 marks]